Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method, ~~of~~

synchronizing ~~the~~ a carrier frequency of a mobile station with ~~the~~ a carrier frequency of a base station in a cellular mobile communication system, the synchronizing including:

~~a reference frequency oscillator being re-adjusted by means of a final controlling element, characterized in that the~~ determining and/or predicting a frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station; and ~~the~~

determining and/or predicting, separately from determining and/or predicting the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station, a frequency variation that occurs when there is a change in ~~the~~ location of the mobile station relative to the base station; and ~~are determined and/or predicted separately, and in that,~~

when a large frequency variation is determined and/or ~~expected~~predicted, synchronizing, using an AFC algorithm, the carrier frequency of the mobile station ~~is synchronized~~ with the carrier frequency of the base station~~, by means of an AFC algorithm,~~ more frequently than is the case when a small frequency variation is determined and/or ~~expected~~predicted.

2. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~comprising making a distinction ~~is made~~ in the mobile station between whether the frequency variation is due to a change in temperature ~~and/~~or to a change in location, ~~and~~ the making including making a distinction ~~is made in particular~~ between the proportion of the frequency

variation that is due to a change in temperature and the proportion that is due to a change in location.

3. (Currently Amended) A method as claimed in claim 2, ~~characterized in that the~~wherein making the distinction ~~is also made by~~includes determining whether the course followed by the frequency variation is steady or abrupt.

4. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~ comprising processing together the frequency variations that result from a change in temperature and/or a change in location, the processing including detecting ~~are processed together in such a way that~~ canceling out by superimposition ~~is detected~~.

5. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~comprising obtaining in the mobile station a measured variable from which conclusions are drawn as to the absolute temperature of the mobile station ~~is obtained in the mobile station~~.

6. (Currently Amended) A method as claimed in claim 5, ~~characterized in that the~~comprising determining a time-based temperature gradient ~~is determined~~ from measured variables.

7. (Currently Amended) A method as claimed in claim 5, ~~characterized in that~~ comprising storing in the mobile station a curve for the ~~change in~~ frequency variation as a function of temperature, which curve is characteristic of the mobile station, ~~is stored in the mobile station~~storing including storing the curve as a table ~~and~~ such that a value corresponding to an expected change in frequency can be read out from this table.

8. (Currently Amended) A method as claimed in claim 7, ~~characterized in that also stored in the values~~ comprising storing in the table ~~is~~ an exactness indicator that

indicates how high ~~the~~ a probability is of the value stored in the table matching ~~the~~ an actual current shape of the characteristic curve.

9. (Currently Amended) A method as claimed in claim 7, ~~characterized in that~~comprising, when manufacturing the mobile station ~~is being manufactured~~, preloading the table ~~is preloaded~~ by measuring certain plotting points on the characteristic curve, or by shifting a typical, known characteristic curve in translation by an additive value that has been obtained by measuring a single plotting point.

10. (Currently Amended) A method as claimed in claim 8, ~~characterized in that~~comprising, when manufacturing the mobile station ~~is being manufactured~~, preloading the table ~~is preloaded~~ with ~~the~~ values for a typical, known characteristic curve without any measurements.

11. (Currently Amended) A method as claimed in claim 7, ~~characterized in that~~comprising determining or updating the individual characteristic curve ~~is determined or updated~~ by teach-in processes during the operation of the mobile station.

12. (Currently Amended) A method as claimed in claim 8, ~~characterized in that~~wherein values of the table that are preloaded at the time of manufacture have a lower exactness indicator and values measured when ~~the~~ a standard of reception is good have a high exactness indicator, the method comprising replacing ~~and~~ values having a low exactness indicator ~~are replaced~~ by values having a high exactness indicator.

13. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~ comprising storing in the mobile station a heating-up curve that is typical of the mobile station and that represents operation-related changes in temperature with time, the storing including storing the heating-up curve ~~is stored in the mobile station~~ as a table or as parameters

of ~~the~~ an exponential function of the heating-up curve, from which an expected change in temperature can be estimated in advance.

14. (Currently Amended) A method as claimed in claim 13, ~~characterized in that the change in frequency is estimated~~ wherein determining and/or predicting the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station includes estimating in advance the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station by correlating the heating-up curve with ~~the~~ a characteristic curve.

15. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~comprising identifying in advance critical states that affect temperature ~~are identified in advance, and the change in~~ wherein determining and/or predicting the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station includes estimating frequency ~~to be expected can be estimated~~ variations based on the identified critical states.

16. (Currently Amended) A method as claimed in claim 1, ~~characterized in that,~~ wherein determining and/or predicting the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station includes estimating a temperature-related frequency error before any measurement of the frequency error~~, an estimate is made of the temperature-related frequency error that can be expected~~.

17. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~comprising, when measurements of the frequency variation are not possible due to poor reception conditions, estimating a~~the~~ temperature-related frequency error ~~that can be expected is estimated~~ and ~~is taken~~ taking into account ~~in the control process~~ the temperature-related frequency error during the synchronizing.

18. (Currently Amended) A method as claimed in claim 1, ~~characterized in that the current~~ wherein determining and/or predicting the frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station includes, before measuring actual temperature changes or frequency variation, estimating the change in temperature to be caused by a mode of operation of the mobile station, ~~and particularly the current~~ wherein estimating the change in temperature to be caused by the mode of operation includes estimating the change in temperature to be caused by transmitted power and/or, in the case of a TDMA-based mobile station, the number of time slots occupied in ~~the~~ a transmitting mode~~, are included in the processing for the estimation in advance of the change in temperature or frequency variation~~.

19. (Currently Amended) A method as claimed in claim 1, ~~characterized in that the~~comprising determining in advance a probability of ~~a~~ an imminent ~~change~~ jump in frequency~~ which requires controlling action to be taken is determined in advance~~, ~~for which purpose the following critical states of change of location are determined~~the determining including:

~~"movement within the infrastructure",~~

"determining the probability of imminent travel past and below the base station", and

"determining the probability of an imminent change of ~~cell~~"cells.

20. (Currently Amended) A method as claimed in claim 19, ~~characterized in that the information "movement within the infrastructure" is obtained in the~~wherein determining the probability of imminent travel past and below the base station includes:

determining the probability in an idle mode from a change in ~~the~~ a reception time of arrival ~~(TOA)~~ and/or from ~~the~~ a received power on ~~the~~ a reception frequency, ~~with the~~ and

determining the probability in a dedicated mode from a change in ~~the~~ a transmission timing advance ~~(TA) being used in addition in the dedicated mode~~ and from a change in a reception time of arrival and/or from a received power on a reception frequency.

21. (Currently Amended) A method as claimed in claim 19, ~~characterized in that the information "~~wherein determining the probability of imminent travel past and below the base station~~" is obtained~~ includes:

determining the probability in ~~the~~ an idle mode ~~from the fact of the~~based on a reception time of arrival ~~(TOA)~~ approaching a minimum and/or ~~the fact of the~~a received power on ~~the~~ a reception frequency exceeding a ~~given~~ threshold level, ~~with the fact of the~~

determining the probability in a dedicated mode based on a transmission timing advance ~~(TA)~~ approaching a minimum ~~being used in addition in the dedicated mode~~, based on a reception time of arrival approaching a minimum and/or a received power on a reception frequency exceeding a threshold level.

22. (Currently Amended) A method as claimed in claim 19, ~~characterized in that the information "~~wherein determining the probability of an imminent change of cell~~" is obtained~~ includes:

determining the probability in an in ~~the~~ an idle mode from ~~the~~ a power measured in ~~the~~ adjacent cells, ~~with the~~ and

determining the probability in a dedicated mode from signaling to initiate ~~the~~ a change of cell ~~being used in addition in the dedicated mode~~ and from a power measured in adjacent cells.

23. (Currently Amended) A method as claimed in claim 1, ~~characterized in that the~~comprising:

measuring current reception conditions, ~~and particularly the~~including received field strength and/or ~~the~~ a signal-to-noise ratio of ~~the~~ a received signal, ~~are measured~~ and

~~the~~ deriving, from the measuring, control parameters, ~~such as the~~including a length of ~~the~~ an AFC control interval, ~~the~~ a conversion by ~~the~~ an AFC final controlling element, and ~~the~~ an exactness indicator ~~for the table are derived from the results of the measurement~~.

24. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~ wherein the AFC algorithm adjusts ~~the~~ a length of ~~the~~ AFC measuring intervals as a function of ~~the~~ a size of ~~the~~ past and expected ~~change~~ changes in frequency, and/or when critical states of change of location and/or critical states that affect temperature are predicted.

25. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~wherein the AFC algorithm adjusts ~~the~~ a length of ~~the~~ an AFC control interval as a function of ~~the~~ a size of ~~the~~ past and expected ~~change~~ changes in frequency, and/or when critical states of change of location and/or critical states that affect temperature are predicted, and/or when ~~the~~ reception conditions are good.

26. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~wherein the AFC algorithm adjusts ~~the~~ a frequency conversion by ~~the~~ a AFC final controlling element as a function of ~~the~~ a size of ~~the~~ past and expected ~~change~~ changes in frequency, and/or when critical states of change of location and/or critical states that affect temperature are predicted, and/or when ~~the~~ reception conditions are good.

27. (Currently Amended) A method as claimed in claim 1, ~~characterized in that~~ wherein the AFC algorithm adjusts ~~the AFC's~~a memory of measured values as a function of ~~the~~ a size of ~~the~~ past and expected ~~change~~ changes in frequency, and/or when critical states of change of location and/or critical states that affect temperature are predicted, and/or when ~~the~~ reception conditions are good.

28. (Currently Amended) ~~An arrangement for performing the~~A method as claimed in claim 1, ~~characterized in that the~~ wherein the synchronizing includes re-adjusting a reference-frequency oscillator ~~(1) used is one~~ that has no temperature-compensating circuitry and that has an individual characteristic curve having a maximum frequency variation from ~~the~~ a nominal frequency of more than +/- 3 ppm in ~~the~~ an operating temperature range.

29. (Currently Amended) ~~An arrangement~~A method as claimed in claim 28, comprising ~~for performing the method, characterized in that a temperature sensor (5) is provided that measures the~~measuring a temperature of the reference-frequency oscillator ~~(4)~~using a temperature sensor.

30. (Currently Amended) A mobile station, comprising: ~~with~~

a reference-frequency oscillator configured to provide a carrier signal with a carrier frequency; and~~being re-adjusted by means of~~

a ~~final~~ controlling element~~, characterized in that the~~ configured to re-adjust the reference-frequency oscillator and synchronize the carrier frequency of the reference-frequency oscillator with a carrier frequency of a base station, the controlling element including:

means for determining and/or predicting a frequency variation that occurs in the mobile station due to a change in the temperature of the mobile station ~~and the~~ separately from determining and/or predicting a frequency variation that occurs when there is a change in the location of the mobile station relative to the base station; and ~~are determined and/or predicted separately, and in that,~~

synchronizing means for synchronizing the carrier frequency of the reference-frequency oscillator with a carrier frequency of a base station using an AFC algorithm, the synchronizing means synchronizing the carrier frequency of the reference-frequency oscillator with a carrier frequency of a base station more frequently when a large frequency variation is determined and/or ~~expected, the carrier frequency of the mobile station is synchronized with the carrier frequency of the base station, by means of an AFC algorithm, more frequently~~ predicted than is the case when a small frequency variation is determined and/or ~~expected~~predicted.

31. (Currently Amended) A microprocessor for a mobile station, the microprocessor ~~is provided~~ comprising:

means ~~for controlling a reference frequency oscillator characterized in that the microprocessor is provided~~ for determining and/or predicting separately ~~the~~ a frequency

variation that occurs in the mobile station due to a change in the temperature of the mobile station and ~~the~~ a frequency variation that occurs when there is a change in the location of the mobile station relative to ~~the~~ a base station and ~~in that,~~

synchronizing means for synchronizing a carrier frequency of a reference-frequency oscillator with a carrier frequency of the base station using an AFC algorithm, the synchronizing means synchronizing the carrier frequency of the reference-frequency oscillator with a carrier frequency of a base station more frequently when a large frequency variation is determined and/or ~~expected, the microprocessor is provided for synchronizing the carrier frequency of the mobile station with the carrier frequency of the base station, by means of an AFC algorithm, more frequently~~predicted than is the case when a small frequency variation is determined and/or ~~expected~~predicted.

32. (New) A method as claimed in claim 1 wherein the synchronizing includes re-adjusting a reference-frequency oscillator using a controlling element.

33. (New) A mobile station as claimed in claim 30, wherein the controlling element includes means for making a distinction in the mobile station between whether the frequency variation is due to a change in temperature or to a change in location, including making a distinction between the proportion of the frequency variation that is due to a change in temperature and the proportion that is due to a change in location.

34. (New) A mobile station as claimed in claim 30, wherein the controlling element includes means for processing together the frequency variations that result from a change in temperature and/or a change in location, the processing including detecting canceling out by superimposition.

35. (New) A mobile station as claimed in claim 30, wherein the controlling element includes means for storing in a memory of the mobile station a curve for the frequency variation as a function of temperature, which curve is characteristic of the mobile station, the

means for storing including means for storing the curve as a table such that a value corresponding to an expected change in frequency can be read out from this table.

36. (New) A microprocessor as claimed in claim 31, comprising means for making a distinction in the mobile station between whether the frequency variation is due to a change in temperature or to a change in location, including making a distinction between the proportion of the frequency variation that is due to a change in temperature and the proportion that is due to a change in location.

37. (New) A microprocessor as claimed in claim 31, comprising means for processing together the frequency variations that result from a change in temperature and/or a change in location, the processing including detecting canceling out by superimposition.

38. (New) A microprocessor as claimed in claim 31, comprising means for storing in a memory of the mobile station a curve for the frequency variation as a function of temperature, which curve is characteristic of the mobile station, the means for storing including means for storing the curve as a table such that a value corresponding to an expected change in frequency can be read out from this table.